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Return-Path: <glowbugs@theporch.com>
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Date: Fri, 1 Nov 1996 09:38:47 -0600 (CST)
Message-Id: <199611011538.JAA15110@uro.theporch.com>
Errors-To: conard@tntech.campus.mci.net
Reply-To: glowbugs@theporch.com
Originator: glowbugs@theporch.com
Sender: glowbugs@theporch.com
Precedence: bulk
From: glowbugs@theporch.com
To: Multiple recipients of list <glowbugs@theporch.com>
Subject: GLOWBUGS digest 338
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas
X-Comment: Please send list server requests to listproc@theporch.com
Status: 0

GLOWBUGS Digest 338

Topics covered in this issue include:

- 1) Solving the copyright problem
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- 3) Obtaining use permission from QST
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- 8) 6AE8 tubes
by davemed@ix.netcom.com
- 9) Re: regen audio amplifier funzies
by mjsilva@ix.netcom.com (michael silva)
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by k7yha@juno.com (Richard H. Arland)
- 12) Re: Request permission to use severel old QST articles
by Jeffrey Herman <jherman@hawaii.edu>
- 13) Re: Regens & Things that go "SSsssssst" in the night
by herr@ridgecrest.ca.us (Michael Herr)

- 14) BA net
by Richard Wilkerson <richqrp@pacbell.net>
- 15) Amplifier help!
by Tony Gallagher <radiol@iol.ie>
- 16) Re: Tube Reactivation Info Sheet - 1927 ARRL Handbook
by W4AOS@aol.com
- 17) SP600 Parts Needed
by W4AOS@aol.com
- 18) Re: regen audio amplifier funzies
by rdkeys@csemail.cropsci.ncsu.edu

Date: Thu, 31 Oct 1996 09:09:33 -0700
From: jeffd@coriolis.com (Jeff Duntemann)
To: glowbugs@theporch.com
Subject: Solving the copyright problem
Message-ID: <1.5.4.32.19961031090535.00af8498@ntserver.coriolis.com>

Hi gang--

Followed the thread on copyright law with some interest. I know something there, since I have been in publishing for 11 years now, have written seven books and portions of a dozen others, (plus more magazine articles than I remember) and now co-own a significant publishing company that employs 34 people and puts out sixty books a year.

The sad truth is that in copyright law (like in most areas of law today) *nothing* is really clear anymore. This is deliberate on the part of the trial lawyers' bloc: The idea is to make it impossible to do anything without incurring some liability somewhere. And since judges are just promoted lawyers, well...but we don't need to discuss that here.

The point is that the law itself means very little these days. Fair use is only fair use until somebody with money challenges you in court. Intel tried to trademark the small letter "e" some years ago. A few years later Lexis sued Lexus because, obviously, people were mistaking a car for a lawyers' online service...and it gets nuttier and nuttier. Vote AGAINST the lawyers' bloc if you value the rule of law. When the rule of law vanishes in a sea of mud, freedom is next in line.

Some things are quite plain: Posting scanned copies of old QST articles is a copyright violation. I doubt ARRL would go after anybody too hard; most likely they would say, Stop that and expect us to stop it. Handing copies of old articles to friends is technically a violation, but it's a small enough thing that I doubt there's much potential for litigation in it. The legal guideline of "lost sales" does apply as a mitigating factor; if the material being copied cannot be obtained for a fee there are limits on the

sorts of redress a copyright holder can demand. It's still an ethical question, but as the copied material is in fact being used for educational purposes (that is, no one is going to start a production line to sell 6L6 transmitters, nor gathering circuits into a book to be sold, nor distributing it in any organized fashion) legality is in fact the darkest of all dark grays.

Probably the high road would be for one of us to approach ARRL about licensing some selected articles (probably the ten or fifteen best glowbug circuits of the last sixty years) for distribution at no cost to interested parties. ARRL is always asking for money, and I've sent it from time to time; perhaps a couple hundred bucks in return for written permission would be a good thing to do. For them it would be "free money" and it would keep us reliably out of trouble.

On the other hand, is that really necessary? How many of us slavishly reproduce the circuits in the old articles *precisely* as given? In fact, given the current parts situation, a published article from 1955 is nearly always a point of departure. You gather the parts you can and you build the radio that works. This is almost never the same radio you see in the magazine.

My suggestion is that people who are actually building radios redraw the circuits they actually build, *including all the changes they made.* It can't hurt, in fact, to "mutate" the design a little, in the process--and then post the mutated circuit with a whole new written description.

A lawyer might object that such a circuit is a "derivative work" and to a degree this is true. However, a combination of factors puts this strategy, in my view and experience, clearly outside the realm of actionable copyright violation:

1. The circuits we are fussing with here are *very* simple. The design of a Hartley oscillator is governed by physical laws (that is, it's not a mystery novel) and there are only so many ways one can go together. One cannot copyright things like that, although in their time (which was long ago, thank you Major Armstrong!) they could be patented.
2. We are in fact engaged in nonprofit educational activities. We are not an organized school, but that is not a criterion. We are the radio school in the marketplace. We teach.
3. This is the way things have always been done. In many of the articles in my files, the author will say something like, "This circuit is based on one by old Elmer Sparkbanger published in Radio Age in the Forties..." and if you go back to the original it looks *mighty* similar. Hams have always been seat-of-the-pants technologists. We look in a catalog of standard circuits and we string them together. Or we take a published circuit and beat on it until it does what we want.

4. This is what ham radio is **for**. I cannot imagine that ARRL or other holders of copyright on material forty, fifty, or sixty years old would be so petty as to grumble about derivative work in our efforts to keep a "lost technology" alive through new and original research. If they are, then it's time to rethink our loyalties in this hobby--or maybe the hobby itself.

I did something interesting last night. I gathered all the 6AG7-6L6 transmitter circuits I had on file together on the desk, and I created a new one by taking a little bit here, a little bit there, doing some math, adding some features, and drawing it all neatly in one piece. I tried to minimize the "unobtainium" factor. This circuit was among the most common "novice" designs ever conceived. Dozens of them have been published, many have been manufactured. (The cute little Micamold novice rig is one of the best.) The one I drew is not precisely like any of them, though it depends to a degree on all of them. I would lay money that the circuit would work as I drew it, though I won't know until somebody builds it, at which time the circuit will change yet again.

I propose we do something like this: Take the commonest glowbug designs, the ones we want to play with, and re-create them as I did last night. Get the "secret masters" on line to look over the circuits, suggest improvements, and then build a couple. When we get a circuit that works well, we place the design in the public domain and post it all over the place.

I'll start with two circuits: My "KickAss regen" which I have built and does work (though I'm sure it could be improved) and the 6L6 transmitter I drew last night. Neither is a dead-on copy of any published design. I drew them in Visio, and if you'll give me a weekend to clean them up I'll post them on my FTP site in TIF format. Let's talk about them, improve them, prove them out, and then put them in the public domain. I can draw other circuits in Visio as well given a clear sketch; it produces a **very** professional-looking diagram. (I'm a good draftsman and fast, too.)

Those who don't have FTP capability can send me an SASE for a paper copy.

This seems to me the best way to go. Any interest?

--73--

--Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Thu, 31 Oct 1996 12:13:24 -0500 (EST)
From: "Barry L. Ornitz" <u856010@eastman.com>
To: glowbugs@theporch.com
Cc: Rossi Giuseppe <g.rossi@crf.it>
Subject: 4CX250 Input for VHF
Message-ID: <Pine.ULT.3.91.961031111822.19348A-1000000@dua150.kpt.emn.com>

On Thu, 31 Oct 1996, Giuseppe Rossi wrote:

> I'm trying to build a linear tube amplifier with a couple of 4cx250 for
> 2 meter band. The tubes, feeded on the grid, are coupled in parallel,
> and I have a question about the input tuning circuit:

On two meters, it might be much simpler to use the two tubes in push-pull. This places the input and output capacitances in series rather than parallel. Since the tubes already have significant capacitances, a conventional Pi output network is not possible unless an extremely high value of circuit Q is used. Push-pull operation, with the output capacitances in series, allows a more reasonable output tank circuit.

Parallel operation is possible however if the right kind of matching networks are used. My discussion below is for parallel operation. Many designs for push-pull may be found in older ARRL handbooks and VHF manuals. Many use copper water pipe as the tuned circuits (known to U.S. hams as plumber's delight construction).

> I 've seen a project in which the author tunes the input circuit by a
> $\lambda/2$ long "microstrip", directly connected at the tube side on the
> grid, while at the front end side there is a shunt cap.

This is not really a microstrip transmission line in the normal sense. It is, however, a $1/2$ wavelength resonator inside a shielded box. The tube capacitance shunts one end while the shunt capacitor shunts the other. The result is $1/2$ wavelength electrical resonance even though the physical length is much less than $1/2$ wavelength.

> The question is: since the metal strip has a noticeable physical length
> more than 40 cm (exactly 44cm) and i wish to avoid that strip (otherwise
> the amplifier is too cumbersome).

>

> Can anyone explain to me why to use a $\lambda/2$ line? A $\lambda/2$ line
> doesn't transform the input impedance, so why to use it? What about of
> using a line with a dielectric (e.g. teflon)?

A $1/2$ wavelength line is often easier to tune than a $1/4$ wavelength line. If you study the circuit a little more, you will likely see that the coupling loop for the drive signal is located near the middle of the line.

In this case, the line really is an impedance step-up "transformer" since the drive is applied at the middle (RF grounded) and the tube grids, which are high impedance, are $1/4$ wavelength away. This should give you a hint on what you might consider...

A $1/4$ wavelength line, grounded to the chassis on one end, with the "hot" end tied to the grids through DC blocking capacitors, is exactly half of the input circuit you describe. The input coupling loop will still be on the grounded end. As a starting point, take the existing dimension and divide it by 2 giving 22 cm. Now this is only about 42% of a free-space $1/4$ wavelength which means that the line is inductive. The input capacitance of the tubes, however, brings the line back into resonance.

This is certainly one approach to try, but you will find that getting low-loss DC blocking capacitors is a problem and that the DC bias on the tubes will require RF chokes and some thought since the grids are at a high impedance point. With the $1/2$ wavelength line, the entire line can be isolated for DC and the grid bias introduced in the center where it is a low impedance point. This greatly reduces the requirements on the RF choke. However connecting the grids together like this eliminates the possibility of separately adjusting the grid bias on each tube. This means that matched tubes will be needed.

As to your question about using a dielectric to shorten the line, this will certainly work. You will need an extremely low loss dielectric like polytetrafluorethylene (PTFE, Teflon). I would tend to avoid this approach however.

Another possibility is to add a little extra capacitance to each end of the line to shorten it a few additional centimeters. Be sure and do this symmetrically to keep everything balanced. Another possibility is "folding" the line a little to keep the same total surface length but fit it in your slightly shorter box.

To read a little more about these design issues, I would suggest some of the later editions of the ARRL handbook, or better still the RSGB VHF/UHF manual. I have not seen a recent edition of this but my older RSGB Handbook and VHF/UHF books give lots of information. [Note to all Glowbugs readers: the RSGB books are much more practical than the comparable ARRL books, yet the theory is there too. They are great for any amateur considering homebrewing his own radio equipment. RSGB is the Radio Society of Great Britain.]

One final reminder too, Guiseppe... Be sure and use the proper sockets for the 4CX250's. This means you will definitely need the ones with built-in screen bypass capacitors. You can get away with external bypass capacitors on HF but at two meters you will certainly need them.

> thank you
> iw1clx, Giuseppe Rossi

Thank you for participating here and for asking a good technical question.
Good luck with the amplifier; please let us know how it turns out.

73, Barry L. Ornitz WA4VZQ ornitz@eastman.com

Date: Thu, 31 Oct 1996 13:21:10 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com
Cc: rdkeys@csemail.cropsci.ncsu.edu ()
Subject: Obtaining use permission from QST
Message-ID: <9610311821.AA109112@csemail.cropsci.ncsu.edu>

Whilst we are hot on the copyright issue, and because I think there is a simple way to approach the problem, with complete satisfaction, allow me to approach the ARRL, on behalf of myself (and maybe on behalf of the glowbugs list, if desired) to officially obtain permission to use certain QST articles as reprints, in our scholarly pursuit of the art and craft of early radio.

I did just this several years back, and received an open ended permission to use what articles I desired, provided the following credit line was affixed to each article, ``Reprinted courtesy [issue date] QST.'' That was all that was required. That is how we are able to use the Grammer Hartley oscillator article and the Barracks Bag VFO article in my archives. That is how I am able to use QST articles in the regen and hartley manuscripts that I have been working on for too many moons.

I would appreciate feedback from those interested, directly to rdkeys@csemail.cropsci.ncsu.edu, and those that have minor/professional publishing capability that could be adapted to this effort for making commonly available on-line reprints possible, for our scholarly purposes.

I have primitive publishing capability, here, via my TeX/LaTeX and troff typesetters, that output postscript with graphics, in the manner of many of the scientific publishing houses, and in a close repro of what the original QST articles were set into type like, although my time is most often in short supply. I have boilerplates already up for such articles. It is mostly a matter of rekeying the texts, adding notes and scanning or redrawing schematics and photographic images, and proofing.

As long as we don't abuse our potential, in this area, I think there should be no real problems, pursuing our scholarly learning and wisdom in ancient technologies. After all, it is history, right,but, what fun history and what fun wisdom, with proper citation and permission.

73/ZUT DE NA4G/Bob UP

Date: Thu, 31 Oct 1996 11:01:25 -0700
From: jeffd@coriolis.com (Jeff Duntemann)
To: glowbugs@theporch.com
Subject: Pictures of homebrew tube stuff
Message-ID: <1.5.4.32.19961031105727.009624e0@ntserver.coriolis.com>

Hi gang--

My Junkbox Radio Web site isn't done yet, but I scanned a bunch of pictures for it and thought some of you might want to see them early, as they may cast light on some things I've mentioned recently on this list. So I snuck a ZIP file full of JPG images up on our FTP site for you to grab if you want a look:

<ftp://ftp.coriolis.com/pub/Shareware/junkbox.zip>

Note well: This URL *IS* case-sensitive. "Shareware" must be capitalized or the machine will shrug at you.

The file is hefty (1.2MB) because I haven't space-optimized the scans yet. It contains:

1. Three views of the chassis work on my superhet project, which I described here a couple days ago.
2. Inside and outside views of the first transmitter I ever made back in 1973, the transformerless wonder I called The Ol' Shockbox for obvious reasons. It was an Electronics Illustrated project originally named the Mini-Mitter, from 1965 or so.
3. Several pictures of tube breadboard lashups I've made, one a complete regen with a 12AX7 detector and 6T9 audio, and the other part of a superhet I put together to tinker with mixer circuits and RF amp tracking.
4. A shot of some regen coils I've made, one on a commercial form, two on vitamin bottles, and one on a piece of spindle from an ancient mainframe line printer.

The photography isn't super terrific. I've been hinted at that I'm getting a better camera for Christmas. That should help.

I can't leave the file up there forever, but it should be there for a week or two. Once the Web site is finished they'll be permanently available (with associated text) and not quite so big.

--73--

--Jeff Duntemann KG7JF
Scottsdale, Arizona

Date: Thu, 31 Oct 96 13:39:02 EST
From: jkh@lexis-nexis.com (John Heck)
To: glowbugs@theporch.com
Subject: Re: Obtaining use permission from QST
Message-ID: <9610311839.AA14019@beans.lexis-nexis.com>

Folks,
I highly support Bob's efforts to persue this idea. I, for one, don't intend to stop making copies for friends and myself, but it would be nice to make it possible to have a database of articles. As you see, probably most publishers are willing to allow us to share their intellectual property as long as proper credit is given.
Regards,
John Heck, KC8ETS
1009 Donson Drive
Dayton, Ohio 45429
(513)865-7036(work)
jkh@lexis-nexis.com

> Whilst we are hot on the copyright issue, and because I think there is a
> simple way to approach the problem, with complete satisfaction, allow me
> to approach the ARRL, on behalf of myself (and maybe on behalf of the
> glowbugs list, if desired) to officially obtain permission to use certain
> QST articles as reprints, in our scholarly pursuit of the art and craft
> of early radio.
>

Date: Thu, 31 Oct 1996 15:22:33 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: lweinberg@arrl.org
Cc: rdkeys@csemail.cropsci.ncsu.edu (), mwilson@arrl.org,
Subject: Request permission to use severel old QST articles
Message-ID: <9610312022.AA109260@csemail.cropsci.ncsu.edu>

Lori Weinberg,
Mark Wilson, Publications Manager
American Radio Relay League,
225 Main Street,
Newington, CT 06111-1494.

31 October, 1996

Dear Lori and Mark:

Back in 1993, I requested and was granted permission to use several early QST articles in a historical radio work that I was writing for use by interested local hams in our club's Homebrew SIG. That went well, and was well received. Thank you for your permission to use those articles.

Lately, there has been some interest, amongst a group of radio history buffs and constructors, known as the Glowbugs, a group interested in learning about the history and development and practical application of vacuum tube electronics in amateur radio, in using some of these articles as a basis for building/testing/learning about early receivers and transmitters. This group meets via the internet as a mailing list of about 200 individuals. Out of these 200, perhaps some 25 or so are interested in actually building and testing such early equipment. It would be of benefit to me or them/us, collectively, to be able to use about half a dozen or so of the historically more important articles that have appeared in QST, for our building/testing/discussions on the topic. Of particular interest would be classic articles such as the John Reinartz regen receiver article in 1922, the 1928/29 articles on receivers and transmitters (the ``1929'' style amateur station series put together by the ARRL Technical Department under the able direction of the well known Ross Hull), several of the articles made famous by the other well known Technical Department staffer, George Grammer, in the 30's, and then one or two after the war when the last general use of such equipment was made, and the transition to the classic novice style single tuber rig began. These are basically the articles that you granted me permission to use, previously, plus one or two other selections that seem appropriate.

My/our(the Glowbugs) use of these articles should fall under the scholarly use category, as I interpret such matters. But, I feel that it is appropriate to obtain express permission, and credit/cite ``Reprinted, [issue date], courtesy QST'', as I had done earlier in previous works.

To this end, I would like to formally request permission from the ARRL to make a few copies of selected early QST articles, as covered above, for my/our(the Glowbugs) use in our discussions/building/learning about early radio.

Thank you for your consideration in this matter.

Sincerely,
Robert D. Keys/NA4G
rdkeys@csemail.cropsci.ncsu.edu

p.s. Two other things that might be of interest to other amateur radio operators..... 1) a short note in QST about the Glowbugs, and how interested members of the amateur community may join in on our discussions and on-the-air nets, and 2) the articles that I put together back in 1993 are in electronic PostScript format which might be worth archiving in the ARRL's on-line archives somewhere, if interested (I would be happy to forward copies via email if so interested)(perhaps other such historical reprints could be put there, too).

cc C.F. Murray/WS4S conard@tntech.campus.mci.net
(listowner of glowbugs@theporch.com)
cc Glowbugs mailing list (glowbugs@theporch.com)

Note: The Glowbugs mailing list information can be obtained from the listowner, C.F. Murray/WS4S, conard@tntech.campus.mci.net, via email.

Date: Thu, 31 Oct 1996 15:26:10 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: glowbugs@theporch.com
Cc: rdkeys@csemail.cropsci.ncsu.edu ()
Subject: Well, I opened Pandora's box.....(:+\.\.....
Message-ID: <9610312026.AA109277@csemail.cropsci.ncsu.edu>

In a prior mailing, you all should have received a copy of a letter I just sent to ARRL, requesting permission to use some of the QST articles. Keep your fingers crossed, and maybe we will get our OK permission.

Please DO NOT let your mailers reply to the ARRL or the listowner's mailbox. Make all replies specifically to ME.

Thanks, and keep yer glowbottles warm and do an incantation over them, tonight.....

73/ZUT DE NA4G/Bob UP

Date: Thu, 31 Oct 1996 15:36:20 -0800
From: davemed@ix.netcom.com
To: glowbugs@theporch.com
Subject: 6AE8 tubes
Message-ID: <1996121163418126962@ix.netcom.com>

Well I am surprised some of you tube gurus out there could not identify the 6AE8. I have one clue and that is it is a triode heptode but has a different pinout to the 6EA8. Probably of British origin with no known US equivalent. Presumably used as a frequency converter???

If anyone has a use for them I have 12 NIB here.
Nice collectors item as they were made in Australia by the Amalgamated Wireless Valve Company (AWV).
73 de Dave KI6QE/7

Date: Thu, 31 Oct 1996 17:43:36 -0800
From: mjsilva@ix.netcom.com (michael silva)
To: glowbugs@theporch.com
Subject: Re: regen audio amplifier funzies
Message-ID: <199611010143.RAA24130@dfw-ix10.ix.netcom.com>

Hi gang,

Was out of town for a few days and was glad to see so much activity on the list when I got back. Now to the particulars...

Bob wrote:

>Output - a 1 inch cube size 5 h choke

>Tube - common 6J5 with no biasing

>Voltage gain - 40 (did not measure plate current, probably 1 ma or so).

Just so happens I've been musing on the low calculated gain of triodes when driving the "standard" 2000 ohm headset. With a gm of 2000 and a load of 2000 the gain works out to only 4 (assuming the plate resistance is well over 2000 ohms). With such a low load it seems that transconductance is everything. Makes me wonder how a 2-tube rig would work with 6AG7s...

Now, about this gain of 40. My first reaction is "no, can't get more than the amplification factor" (20 for a 6J5, and fairly constant at different operating points for any tube, since it's based on geometric considerations). But then there's that matter of an inductive load. So, is it possible to "cheat" and get more gain than the amplification factor by using a reactive load? Since the "bucking effect" of the output voltage on the plate current is not in phase, I wonder? I'll have to think about it, but it sounds too much like a free lunch. OTOH, that's what reactance is anyway, right?

Well, time to dress the kids up and go haunt the neighborhood.

73,
Mike, KK6GM

Date: Thu, 31 Oct 1996 23:18:36 PST
From: k7yha@juno.com (Richard H. Arland)
To: boatanchors@theporch.com
Cc: glowbugs@theporch.com
Subject: WTB: 1950's ARRL Hw To Become a Radio Amateur
Message-ID: <19961031.235933.4391.5.k7yha@juno.com>

Gang:

Does anyone have a copy of an early-to-mid '50s ARRL pub titled: How to Become a Radio Amateur that they would like to sell?

If so pls send private e-mail.

73 es tnx.

rich K7YHA

Date: Thu, 31 Oct 1996 23:58:57 PST
From: k7yha@juno.com (Richard H. Arland)
To: glowbugs@theporch.com
Subject: 3A4 Regen RX in Sep 1995 CQ
Message-ID: <19961031.235934.4391.6.k7yha@juno.com>

Gang:

I originally built this little project as a gag last winter. I teach vocational electronics and wanted to show the class a "real" Armstrong

regen set as part of the course. Normally I show "The Men Who Made Radio" video from PBS in my course, and I thought that this little project would be a good "show and tell" so the class could actually experience using a primitive set.

Unfortunately, the little set never did work the way Ingram's article said it was supposed to (nothing surprising there....seldom do "U-Build-It" articles in magazines EVER work the way they are portrayed).

One of the things I noted was that my set would not go into regen smoothly...it "popped" into regen and had several degrees of oscillation. Another disturbing problem was extremely low volume in the 2K ohm headphones. Finally, sensitivity was REALLY bad.

Yesterday I pulled the little rig out of the equipment cabinet and got the article out to check out what might be the problem (OK, I was bored....no BAs to play with).

I also had a 1959 copy of the ARRL HB that had a similar regen receiver described on pg 118.

Ingram calls for using only 18 VDC on the plate of the 3A4. In my experimentation this is way too low....but I digress.

First order of business was to check the coil and reposition the wires. I came up with a 23 microhenry value for the main coil as checked on our General Instruments RLC bridge. This, coupled with the 10-120 picofarad tuning cap would tune 80 and 40 meters no problem. My coil was built on a 1 inch OD pill bottle (just like the article) but I only used 23 turns of #26 wire, close wound near the top, for the coil. The tickler was only 4 turns placed about one quarter inch below the main winding (Ingram specifies 7 turns which is way too much, as witnessed by my rig's erratic regenning....besides, the HB says that you are to use only enough turns to insure the rig "gens" over the tuning range....hence, I removed several turns and found that my receiver regened just fine, with no popping and erratic behavior).

Rewinding the main coil and tickler coil really made a difference in the way the rig worked.

On to plate voltage: Ingram's article says you can use as little as 18 VDC on the plate of the 3A4. He might be able to, but I can't. My tube performs miserably with only 18 VDC on the plate. Upping the voltage to 27 VDC and performance improves dramatically. I kept on increasing the plate supply voltage and taking MDS measurements via a HP 600D RF generator. Once past 27 volts, regenning was consistent and smooth. Under 27VDC and the tube behaved erratically with almost no gain.

I ended up at 90 VDC on the plate with a MDS of -87 dBm. Not good, but not totally deaf, either. MDS between 36 and 72 VDC was pretty consistent at -80 dBm. Morale of the story: get the plate voltage up around 36 to 45 volts MINIMUM in order to start seeing some performance from the tube.

I am NOT satisfied with the overall sensitivity and lack of audio gain. Ingram, in his article, states that this is a "red hot" performer....can't prove that by me. In comparing the schematics between the CQ article and the HB, I noticed that the rig in the HB had the antenna coupled to the main tuning tank circuit via a capacitor and an air-would link turn. This may be something to look at. Certainly, I am going to include a small triode as an AF amplifier. Unless you are in a VERY quite room with the headphones clamped on real tight, you just don't hear much.

One other comment about the regen control: I find that the 1K ohm pot used to provide regen is EXTREMELY sensitive and is very critical in adjustment. A slight, and I MEAN tiny, movement of the regen control and the receiver either drops out or de-senses. You MUST make the regen adjustment very precisely. My Heath GR-81 super-regen SW set is not that critical at all. I am wondering if replacing that 1K pot with a more conventional regen control might not prove to be a good move?

One final comment: The tuning is really NON-linear. 80 meters is fairly easy to tune but 40 meters is quite tightly packed near the high end of the tuning range of the cap. I think what I will end up doing is re-designing the tank circuit to cover just 80 meters with a lot more bandspread using a smaller cap along with a bandspread cap. I really don't know how anyone can actually use this rig on 40 meters the way it performs built according to the article. 80 meters might be OK but 40 is really pushing the envelope of reality.

Anyway, for all who have e-mailed me, there it is: my findings regarding the Ingram glowbugs article in Sept 1995 CQ. I am not faulting Ingram in any way.....having written columns for magazines for 9 years, it is not surprising to find things like this creeping in. I usually dreaded any kind of construction article, cuz I knowed that someone was gonna blow holes in it, regardless of how much debugging I did.

Comments?

73 rich K7YHA

Date: Thu, 31 Oct 1996 17:49:45 -1000
From: Jeffrey Herman <jherman@hawaii.edu>
To: rdkeys@csemail.cropsci.ncsu.edu
Subject: Re: Request permission to use several old QST articles
Message-ID: <Pine.GS0.3.93.961031174914.9353C-100000@uhunix2.its.Hawaii.Edu>

Bravo, Bob! Very well written.
73 from Hawaii,
Jeff KH2PZ / KH6

Date: Fri, 1 Nov 1996 00:10:19 -0800
From: herr@ridgecrest.ca.us (Michael Herr)
To: glowbugs@theporch.com
Subject: Re: Regens & Things that go "SSsssssst" in the night
Message-ID: <v01530500ae9f1d73e707@[199.120.150.178]>

>Gang:
>
>OK shoot me! Go ahead. I've been bad. Very, VERY bad. I haven't been
>saving the postings about regens. Now I decided (today) to take the old
>3A4 >My little regen does not have a smooth regen action. Volume is very
>low
>and tuning range is limited. Somewhere I thought I saw a post about this
>circuit and the author said that Ingram's coil data was all
>wrong...especially the tickler....it should only be 3 or 4 turns. Just
>enuff to get the thing to go into regeneration.
>
>(Boatanchor Bob, where are you?!?!?)
>73 rich K7YHA

Rich,
The 3A4 tube rig is very similar to the one out of the old Boy Scout
Radio Merit badge book. I built one as a kid and had a ball. On that one
the volume isn't all that loud but acceptable (hey, it's only one tube!) It
used a variable condenser for regen control rather than a pot. The B+ used
was 22 volts. I have the coil info somewhere for the Boy Scout version,
I'll look for it this weekend.
73
Mike WA6ARA

Date: Fri, 01 Nov 1996 03:27:20 +0000

From: Richard Wilkerson <richqrp@pacbell.net>
To: glowbugs@theporch.com
Subject: BA net
Message-ID: <32796E18.64F8@pacbell.net>

Could someone please tell me the frequency of the Net and the time?
I thought it was 7050kc. but dont really remember.
thanks, rich, wd6fdd

Date: Fri, 1 Nov 1996 12:57:28 GMT
From: Tony Gallagher <radiol@iol.ie>
To: glowbugs@theporch.com
Subject: Amplifier help!
Message-ID: <1.5.4.16.19960702192530.22d7c4c2@iol.ie>

Does anybody have any scematics that they could JPEG, FAX or Snail-Mail me?
I'm trying to build a 88-108Mhz linear amplifier, built around a 4CX250.

Any help would be appriciated!

Thanks a million!

73's 88's!

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Date: Fri, 1 Nov 1996 09:39:38 -0500
From: W4AOS@aol.com
To: glowbugs@theporch.com
Subject: Re: Tube Reactivation Info Sheet - 1927 ARRL Handbook
Message-ID: <961101093937_343961679@emout03.mail.aol.com>

In a message dated 96-10-30 18:39:50 EST, NA4/G quotes an article saying in part:

<< The old types of
tungsten-filament (bright) tubes have a more limited emission
remaining constant until burn-out of the filament. >>

This reminded me of something I've wondered about for some time, but have never had the chance to try.

Suppose you have a thoriated tungsten filament tube and the rejuvenation process doesn't work. (It eventually will not work when no more thorium is available to be boiled to the surface). In that case how about just using it as a tungsten filament tube, that is, jack the filament voltage up until the tube glows good and bright and puts out plenty of electrons. Seems to me that you have nothing to loose at that point, since the tube is no good in its present condition anyway, so if you could get enough emission just as a tungsten filament to do the job at hand you could get some more hours out of the tube. Inconvenient perhaps to supply an adjustable filament voltage just for that tube, but desperate men are driven to desperate measures!

Your thoughts please gang

Bob w4aos@aol.com

Date: Fri, 1 Nov 1996 09:39:42 -0500
From: W4AOS@aol.com
To: glowbugs@theporch.com
Subject: SP600 Parts Needed
Message-ID: <961101093940_343961690@emout08.mail.aol.com>

Hello gang

I am looking for the rf coil turret assembly from a SP600, plus the tuning capacitor assembly. If necessary would buy the complete rf. front end assembly, or a parts radio with these parts intact.

Thanks

Bob w4aos@aol.com

Date: Fri, 1 Nov 1996 10:59:00 -0500 (EST)
From: rdkeys@csemail.cropsci.ncsu.edu
To: mjsilva@ix.netcom.com
Cc: rdkeys@csemail.cropsci.ncsu.edu (), glowbugs@theporch.com
Subject: Re: regen audio amplifier funzies
Message-ID: <9611011559.AA109534@csemail.cropsci.ncsu.edu>

> Makes me wonder how a 2-tube rig would with 6AG7's...

Well, I had good luck one time using a pair of 6V6's at 12-24 vdc on the plates. It was loud enough to hurt on strong signals with 2 K ohm fones. It was choke coupled in the audio with an old tv tube choke of a few henries to the audio stage and to the tin cans. 0.68uf coupling caps were used.

> Now, about this gain of 40. My first reaction is "no, can't get more
> then the amplification factor" (20 for a 6J5, and fairly constant at
> different operating points for any tube, since it's based on geometric
> considerations). But then there's that matter of an inductive load.
> So, is it possible to "cheat" and get more gain than the amplification
> factor by using a reactive load? Since the "bucking effect" of the
> output voltage on the plate current is not in phase, I wonder? I'll
> have to think about it, but it sounds too much like a free lunch.
> OTOH, that's what reactance is anyway, right?

Well, I measured the input voltage at 0.1vac on the grid with a 600 ohm line to voice coil transformer as the grid inductance, and about 4.4 vac on the plate, across the 5h choke. I was not taking power from the plate circuit, so that would have some effect. Plate voltage was 12vdc. I will try to set it up again on the bench this weekend and see how it does into a tin can load. I dunno why it amplified so well. AC meters are not accurate at low voltages. My meter moved about 2 needle widths on the input reading (I maybe should use a scope to measure it next time). It is possible that that reading was anywhere from 0 to 0.22 vac, but 2 needlewidths on the meter was closer to 0.05 vac than 0.20 vac. I rounded the measured value up to 0.10 vac because of the inaccuracies. That is what I get for measuring on a 10vac scale. When a 600 ohm load was coupled to the output (another 1s-144 speaker), the voltage dropped down to a little over 1.5 vac across the 600 ohm load. The tone frequency was about 440 hz. I did not try other tone frequencies. So, the plate load did affect the output voltage.

73/ZUT DE NA4G/Bob UP

End of GLOWBUGS Digest 338
